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MODULAR CONTAINERS THAT CAN BE INTERCONNECTED,
FOR MULTIPLE USES

BACKGROUND OF THE INVENTION

6 Field of the Invention

7
8 The present invention refers to a new modular container that can
9 be interconnectable, for multiple uses; and its purpose is to
10 favor the conditions for reutilization of containers, especially
11 of the type manufactured for its later discard.

12
13 Description of the Related Art

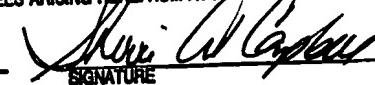
14 As it is public and notorious, in the last decades the whole
15 world has been flooded by products with containers that can be
16 disposed of, which, although they facilitate its employment and
17 they reduce derived operative costs of claim, (such as
18 gathering, classification, cleaning, transport and storage,
19 etc.) they constitute, on the other hand, one of humanity's
20 bigger ecological problems since, once used it is not known what
21 to do with them.

22 The problem is increased when such containers that, can be
23 disposed of, are not structured in material bio-degradables; for
24 that reason its "discard" truly is not the simple transfer of
25 the containers from one place to other, without its matter
26 being degradable it prevails.

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1 Inside the wide variety of containers that can be disposed of -
2 non-degradables - that know each other, the plastic bottles are
3 without a doubt constitute the biggest volume, following them in
4 order are the metallic cans. For that reason, to give an
5 approximate idea of the quantity of containers that are
6 discarded in the world, it would be enough to point out
7 regarding the number of cans alone in Argentina, that are thrown
8 out, approximately 600 million cans per year. In the case
9 particular to the city of Buenos Aires and the metropolitan
10 area, during the year 1996 4,500,000 tons of garbage of the most
11 diverse materials were picked up; having the plastics composing
12 15%, particularly low for the form of containers.

13 The final destination of the plastic bottles at finish is that
14 of the land fills and dumps, as well as those denominated
15 "sanitary fillers", which produces high proportion of
16 environmental contamination, obstructing pipes and mouths of
17 drainages and, mainly, forming true mantels or strata in all
18 type of land fills to which do not ever serve as material of
19 effective filler.

20 Three forms usually exist when facing the problem of the
21 containers that can be disposed of (that are not bio-
22 degradables):

23 1 - the destruction of the containers:

- 1 • By means of the dive or crumbled mechanic: This process,
2 although it facilitates the reduction volumetric of the
3 containers, it doesn't modify the impossibility of
4 degradation of their material.
- 5 • By means of their burnt one: This process is maybe the
6 fewer recommended of all, since the combustion of some
7 plastic substances (I eat the PVC for example), it is
8 highly polluting.
- 9 • By means of the action of chemo-destructive agents: it
10 has been tried to eliminate containers gathering them in
11 piletomes where diverse chemical substances are
12 overturned; but such processes neither have had
13 acceptance, mainly due to the high operative costs, to
14 their limited yield; to that, in certain measure, they
15 are also pollutants (since they generate noxious vapors);
16 and to the fact that in general, they usually produce
17 anyway a residual material.

18 **2 - the reutilization of the containers:**

- 19 • This resource, although useful, is since an
20 employee in a limited proportion, fundamentally, it
21 depends on the contained product (for example, the
22 reutilization of containers that can be disposed of is
23 not allowed to contain nutritious neither medicinal
24 products). Also, the packed original product

1 contaminates anyway, to the new content, and it is not
2 always possible sanitize the containers, particularly
3 when they are of flimsy structure (i.e. for example,
4 those manufactured in processes of having blown).

5 **3 - the one recycled of the material of the containers:**

6 • This resource is also acceptable, because it
7 constitutes a form of use of the container; but has
8 several inconveniences: in the first place, because
9 starting from its first use it is polluted with diverse
10 substances -- inclusive which constituted its first
11 content -- and that, to eliminate them, it required of
12 relatively expensive processes; in second place, because
13 the recycled plastic doesn't conserve the properties of
14 the matter it prevails original and, therefore, it p
15 resents diverse practical inconveniences, such as the
16 premature aging, a bigger fragility, a poor presentation
17 in reason of combining the pigmentations, etc.

18 For everything it, alone a minimum proportion of plastic bottles
19 ends up being reutilized, or recycled.

20 The pattern of utility that is described in the present
21 documentation, constitutes an ingenious resource that
22 facilitates the reutilization of containers that can be disposed
23 of -- types like plastic bottles -- with a different utilitarian
24 end.

1

2 **SUMMARY OF THE INVENTION**

3 In essence, it is to produce a new type of container provided
4 discardable -- so much in their lateral walls as in their
5 bolster and bottom -- a means of reciprocal interconnection with
6 other containers of the same characteristics; so that, instead
7 of throwing them, you stimulate the accumulation of the empty
8 containers to compose structures of all type and application,
9 such as recreational, functional, ornamental, etc.

10 This way, for example, in the constructive aspect the bottles
11 enchain in form of block modulares can constitute an interesting
12 solution to the problem of the housing. So that the blocks
13 transparent holes conform panels, or it leaves off the same ones
14 that facilitate the step from the light to their inclination,
15 cooperating to the environmental natural illumination as well as
16 to the energy saving.

17 Also, in such an application, if the component modular blocks of
18 each container reutilized leaves them empty, (containing only
19 air) they constitute a water heater-insulating structure; while
20 if you then padded one with sand, earth or another material
21 pulverulent or to granulate appropriate, this confers them a
22 bigger inertia and, in the event of being used a dark material,
23 they can also retain the heat of the solar rays to offer bigger
24 comfort to the housing during the night.

1 Similarly, the new containers can be interconnected to form
2 composition games -- recreational or didactic --, circumstance
3 that are changeable to give opportunity to the children and
4 young to develop the genius, and to contribute to the use non
5 pollutant of their environment.

6 It is foreseen that the connections can be carried out forming
7 structures so much right as gulches, undulant, arched and, even
8 ring segmented.

9 The couples among each two serial bottles for their extreme
10 bolster and for their bottom, you can carry out with the neck
11 threaded with or without their placed cover; including, also,
12 statements couple, means of retentive rim that prevent that the
13 modular elements is disconnected spontaneously.

14 In fact, the new system is capable of being applied in
15 everything that the imagination is able to conceive, returning
16 to man his capacity lúdica, when allowing him to apply his
17 genius in the conception of the most diverse structures and
18 configurations, and to take them to the practice within his own
19 hands, to transform containers that can be disposed of in
20 utilitarian and aesthetic systems. That is to say, to make of
21 the useless and harmful, an innovative and useful employment.

22

23 BRIEF DESCRIPTION OF THE DRAWINGS

1 For greater clarity and understanding of the pattern of utility,
2 it illustrates it to him with several figures in which it has
3 been represented in one of the ways I refer you give to
4 everything the simple title of illustrative example, not
5 limitative in which the suitable figures with oneself later
6 corresponds oneself realization type; being::

7 Figure 1-A a view in perspective of the modular container that
8 can be interconnectable in which the means of male embedding and
9 female are incoming and salient in a cylindrical way. You can
10 appreciate that the same ones are prepared in the lateral faces
11 and guided in the longitudinal sense of the container.

12 Figure 2-A, it is a traverse cut of the container in perspective
13 that allows one to appreciate clearly like they appear and the
14 mentioned means are conformed of coupling male-female starting
15 from the respective walls.

16 Figure 3-A, it is a schematic view in traverse court of two
17 containers in bottle form which you couple circular male-female,
18 indicating like the lateral connection takes place according to
19 the arrow.

20 Figure 4-A, it is lengthwise a view in perspective of the cut
21 container in two, and observed from their bottom or base, to
22 show the conformation of the same one, of it couples compatible
23 with the neck, with or without their cover.

1 Figure 5-A, they are two containers cut lengthwise and
2 represented in perspective to show the way in which the extreme
3 interconnection of the bottles takes place according to the
4 present invention.

5 Figure 6-A, a view in perspective of two containers in
6 circumstances of being interconnected by their ends (bolster and
7 bottom) of it couples reciprocal.

8 Figure 7-A, a longitudinal cut in perspective of two containers
9 which shows the figure 4-A, already interconnected by the
10 reciprocal rim of the wall bolster and neck of one in the cavity
11 of the bottom of the other one.

12 Figure 8-A, is a form of connection of the container according
13 to the realization of the figure 1-A that shows three
14 interconnected bottles: two of them co-linear for its ends are
15 couples -- bolster and bottom -- and the third, forming 90° with
16 those.

17 Figure 9-A, is another form of connection of the container
18 according to the realization of the figure 1-A that shows to two
19 containers connected in cross.

20 Figure 10-A, is another form of connection of the container
21 according to the realization of the figure 1-A that shows
22 superimposed lines of containers interconnected laterally by its
23 ends and for two of its opposed lateral walls, forming a wall.

1 Figure 11-A, is a variant of connection of the containers
2 according to the realization of the figure 10-A that shows like
3 two walls can be connected and formed by containers and
4 concurrent to an area equalarea.

5 Figure 12-A, it is a schematic detail in traverse court and it
6 climbs increased of a game of means of joining reciprocal male-
7 female between two pack modulares; this increased detail of the
8 profile of the adornments of reciprocal rim, it shows the
9 formation of grooves or grooves dedicated on one hand of
10 cooperating to the security of the connection, and for another
11 to allow the exit of the air trapped in the female cavity.

12 It is a lateral view of a container in which the lateral
13 interconnection means are rectangular and they are guided in the
14 traverse sense of this container.

15 Figure 13-B, it is a view of a bottle according to the present
16 invention, but with their means of conformed embedding and
17 willing according to a new realization form in which the same
18 ones consist in incoming and salient right and rectangular that,
19 alternately, they extend to all the long of the lateral walls of
20 the same container; being the means of it couples prepared
21 bolster and conformed in an identical way to the figures 1
22 through 12-A.

23 Figure 14-B, a schematic traverse cut of a plurality of
24 containers conformed according to the realization 13-A showing

1 the way in that the lateral interconnection can take place with
2 the mentioned means.

3 Figure 15-C, shows a perspective of the bottle according to the
4 reference invention in a new realization form in the one that
5 the incoming and salient lateral of interconnection, they are
6 right and they prepare traversely.

7 Figure 16-C, a perspective of two bottles according to the
8 realization of the figure 15-C, showing the way in that the
9 mechanical connection takes place among the same ones by means
10 of you couple them traverse right.

11 Figure 17-C, a schematic view in elevation of different bottles
12 interconnected with union, and according to the realization of
13 the figures 15 and 16-C.

14 Figure 18-D, another realization form that, maintaining the
15 basic concepts of you couple them bottom and bolster, as well as
16 the means of it couples lateral, in this case it presents the
17 particularity that this means of it couples lateral they consist
18 on alternate right projections with incoming right, of
19 connection male-female, but that they are guided sidelong with
20 regard to the longitudinal geometric axis of each lateral wall.

21 Figure 19-E, a view in perspective of the container, in which
22 has modified its format since, instead of the cylindrical or
23 prismatic form is, in this case, of section traverse
24 trapezoidal.

1 Figure 20-E, a view of the realization 19-E of the container,
2 shown in perspective from their wall bolster, to observe like it
3 can lean on for one of their faces, for example, the base bigger
4 than the configuration sectional trapezoidal that particularizes
5 it.

6 Figure 21-E, a view of several containers of section traverse
7 trapezoidal, interconnected by the lateral means of it couples
8 according to the invention, forming an undulant body.

9 Page 22-E, a variant of application of the containers connected
10 trapezoidals forming an arch.

11 Figure 23-E, another variant of application of the containers
12 connected trapezoidals forming a body of right segments.

13 The fig. 24-E, another variant of application of the containers
14 connected trapezoidals forming a direct structure.

15 Figure 25, a detail account and as it climbs increased in
16 relation to that of the previous figures that shows the way in
17 which the one takes place it couples longitudinal between two
18 apex characteristic -- they equal -- by means of the entrance of
19 the neck -- sin the cover that is shown here in lines of points
20 -- of one of the containers in the depression or couple female
21 bolster formed in the external cavity of the bottom of the other
22 container; also, in this figure it is observed with clarity that
23 the ring cord in tooth form, starting from which the neck of the
24 container is born, puts on shoes retentively in a compatible

1 ring groove provided by the female cavity of the other
2 container, to assure the retention positional of the one it
3 couples.

4 Figure 26, a detail of the neck of a container, without their
5 cover, indicating like it is calzable the ring cord in the
6 compatible groove of the other container; and finally,

7 Figure 27, the same detail of the figure 27 that shows to a
8 container with the cover begun in the compatible cavity of the
9 other and begun posisionalmente by the reciprocal rim of the
10 cord and ring groove of this containers.

11 In the different figures, the same reference numbers indicate
12 same or corresponding parts, and they have been pointed out with
13 the letters the groups of several elements.

14 Listing of the main references:

- 15 (a) means of lateral interconnection of the bottles
- 16 (b) means of interconnection bolster of the bottles
- 17 (1) lateral walls (they are which provide the means)
- 18 (1') smaller lateral wall of base (in the realization
- 19 of container trapecial, figures 19 at 24)
- 20 (1'') lateral walls (in the realization of container
- 21 trapecial, figures 19 at 24)
- 22 (2) embeddings lateral male (salient)
- 23 (2') embeddings lateral female (recesses)
- 24 (3) bottom

1 (4) wall bolster
2 (4') cavity of the bottom (3) for the interconnection
3 bolster
4 (5) neck of (4), (it acts as connector male bolster
5 (5') couple female bolster in the bottom (3)
6 (6) it covers
7 (7) ring cord in tooth form, from birth of the neck
8 (5)
9 (7') groove ring memory of (7)

10

11 **DETAILED DESCRIPTION OF THE INVENTION**

12 To the specified ends, the new modular container that can be
13 interconnectable, for multiple uses, it is of the type that,
14 conforming a bottle or the similar thing, -- the structures and
15 materials usually developed for its it discards --, essentially
16 understands a bottom (3) and lateral walls (1) finished in a
17 wall bolster (4); and this wall bolster (4), is prolonged in a
18 neck (5) the limitation of an access mouth to its interior,
19 shuttable by means of a cover (6) of it removes and put;
20 characterized because so much the lateral walls (1) as those of
21 bottom (3) and bolster (4), they possess means of lateral
22 interconnection (to) and bolster with other containers (TO) of
23 the same characteristics.

24

1 In general terms, and i.e. was already early described, the
2 invention refers to a container that essentially can conform a
3 bottle plastic or similar material, whose structure and
4 materials have been usually developed for its discards, after
5 the use of its content, to other uses. This type of bottles
6 essentially understands a bottom (3) in the one that you/they
7 have its birth the lateral walls (1) finished in a wall bolster
8 (4) that can be plane, or forming arched shoulders, in form of
9 cone trunk, etc.; being prolonged the same one in a neck (5)
10 that, in form of tubular mouthpiece, it defines an access mouth
11 to the interior of the bottle, shutable by means of a cover (6)
12 that can be removed and put back on with engaging threads and
13 application of pressure, etc.

14 In the case of the present invention, the bottle, to modulate
15 interconnectable possesses interconnection means to interconnect
16 (to) with other containers that have lateral walls and the
17 bottom and top surfaces with means for lateral and top and
18 bottom interconnection.

19 The interconnection means (to) they prepare in lateral walls
20 (1), while they make it combinable at their bottom (3) and
21 in their wall bolster (4). This way, so much the lateral walls
22 (1) as the head and the bottom of each container they possess
23 means of lateral interconnection (to), and bolster. (To see
24 figures 1-A, 4-A, 13-B, 15-C, 18-D); what allows to this type of

1 container -- and the holes -- reutilizable with recreational,
2 didactic, functional ends, etc. by means of reciprocal joinings
3 (i.e. for example, which illustrate the figures 3-A, 5-A, 6-A,
4 7-A, 8-A, 9-A, 1-A, 11-A, 12-A, 14-B, 16-C, 21-E, 22-E, 23-E,
5 and 24-A in a non limitative way).

6 Essentially, the means of lateral interconnection (to) include
7 compatible recesses and salient conformed in the lateral walls
8 (1) of the bottle like means of embedding lateral male (salient)
9 (2) and female (recesses) (2') that are compatible to each
10 other. In a favorite form of realization the mentioned
11 embeddings lateral male (2) they are constituted for salient
12 cylindrical that constitute bellboys of it couples compatible
13 with the embeddings lateral female (2') that are incoming or
14 equally cylindrical cavities/recesses. These means of lateral
15 interconnection (to) they prepare in the lateral walls (1)
16 guided in the longitudinal sense of the bottle, and aligned on
17 oneself axis and so that the lateral wall (1) opposed they have
18 different embeddings (2) and (2'). This way while a lateral
19 wall (1) has embeddings lateral male (2), the lateral wall (1)
20 opposed -- to, in their case, the adjacent one -- it possesses
21 embeddings lateral female (2'). (To see series of figures).
22 The employment of means of lateral female male couples (b) in a
23 cylindrical way, besides simplifying the connection, has the
24 advantage of facilitating the relative rotation among pieces

1 connected by an only game of means (2)-(2'), if it was required
2 it (it figures 9-A). But, equally, the salient ones in form of
3 bellboys (2), it can be polygonal just as hexagonal, pentagonal,
4 etc.; should be of same compatible format the means of it
5 couples female (2').

6 In other realization forms the means of lateral interconnection
7 (to) among bottles they can be constituted by embeddings lateral
8 male (2) and female (2') of different conformation. This way,
9 the same ones (2)-(2') they can be straight recesses and
10 salient/alternative nerves right and alternate of configuration
11 rectangular parallelepiped, willing alternately in each lateral
12 wall (1), like one observes in the series of figures of the
13 realizations 13B, 14B, 15C, 16C, 17C and 18D. Also in different
14 realization forms, these lateral embeddings (2) (2') they can be
15 guided so much in the longitudinal sense of the bottle (you
16 figure 13-B and their form of connection 14-B), like in the
17 traverse sense (you figure 15 at 17-C); and even oblique (it
18 figures 18-D).

19 Preferably, the lateral faces -- destinadas to enter in
20 reciprocal contact in the salient ones (2) and recesses (2') --
21 they have a design ranurado or grooved (like it is schematized
22 in the cut of the figure 12-A), with the purpose of offering a
23 bigger retention of it couples and to facilitate the exit of the

1 air (since, it being trapped, air pressure would spread to
2 produce the spontaneous decoupling).

3 With regard to the means (b) of extreme interconnection between
4 the bolster of a bottle and the bottom of another of the same
5 type, they are which show the figures 4A, 5A, 7A, 13B, 25, 26
6 and 27. In general, the same ones consist on a salient one by
7 way of male, -- conformada it couples for the wall bolster (4)
8 of the bottle --, compatible with an incoming one that defines
9 the external face of the bottom (3) of the bottle
10 Plus particularly, the wall bolster (4) of the bottle that
11 conforms the shoulders of the same one (planes, arched, conical,
12 etc.), toward the extremity proximal of the same container it
13 reduces their traverse section gradually, to finish in the neck
14 (5) that can be threaded or with projections to allow the rim of
15 a cover (6) of it to be removed and put back. Correspondingly,
16 the bottom wall (3), by way of half of female connection with
17 the wall bolster (4) and their neck (5), it conforms a concavity
18 (4') of size and compatible format with the mentioned shoulders,
19 also including a compatible central depression with the neck (5)
20 of the bottle; being able to produce the one couples of the
21 mentioned neck (5) in direct form, (figure 25 and 26), or still
22 providing their cover (6), in figure 27.

23 It is of highlighting that, preferably, it has been foreseen
24 that the neck (5) of the bottle, be born or possess a salient

1 one or ring cord (7) projected from the periphery of this
2 container and finished in form of ring tooth (figure 25 at 27).
3 This projection can be of the type that usually certain
4 container type has to hold the bottles, as resistant handle
5 (since the necks are usually relatively short); undoubtedly in
6 this case takes advantage it to put it in a ring groove memory
7 (7') that -- compatible in format and disposition with the
8 mentioned cord (7) -- during the one it couples that it is
9 indicated in figures 25 - 27, this groove works as retentive rim
10 of the one it couples with and avoiding that the component parts
11 will come out, unless it is forced into it.

12 In agreement with the mentioned forms, the cavity (4') of the
13 bottom wall (3) it can be concave rounded, or infundibuliforme
14 with a concave portion in the form of a cone trunk including a
15 central depression compatible with a neck of another bottle of
16 similar characteristics and an annular groove. In this last
17 case the concave portion can have trunk-conical form, in a case,
18 or trunk-pyramidal in another. In all the cases the concave
19 portion is provided of a compatible central depression with the
20 neck (5) of the bottle.

21 In another realization form the cavity (4') of the bottom (3)
22 concave it conforms an it couples female bolster (5') that is in
23 size and compatible way with the neck (5) of the bottle, without
24 their cover (6). This couples (5') can have nerves or internal

1 projections that define a lightly smaller interior diameter to
2 the exterior of this neck (5), so that the interconnection male-
3 female among the mentioned neck (5) of a bottle, and the one
4 couples (5') of the cavity (4') power station provided by the
5 bottom (3) of another bottle, is able to take place through
6 forced rim to pressure.

7 In synthesis the union of the bottles modulares
8 interconnectables by means of their respective embeddings
9 lateral males (2) and females (2'), as well as by means of their
10 necks (5) and couple bolsters (5') it allows the constitution of
11 groups in diverse ways and applications, from devices lúdicos
12 until structural groups as walls. (such as which, to simple
13 title of illustrative example, not limitative, they show the
14 figures 3-A, 5-A, 6-A, 7-A, 8-A, 9-A, 1-A, 11-A, 12-A, 14-B,
15 16-C, 21-E, 22-E, 23-E, and 24-A).

16 In what concerns to the format of the container in if, this can
17 be cylindrical, prismatic square, regular prismatic square,
18 prismatic hexagonal (to allow constructions to "bee honeycomb"),
19 and irregular prism etc.; although always maintaining the
20 principle of the lateral joining means and ends that it
21 constitutes the essence of the invention.

22 Another in the ways possible of realization of this format --
23 co-advantageous to favor the reutilization of the bottles up to
24 now discardable -- it is the one of giving to the same ones a

1 format of section traverse trapezoidal (that illustrate the
2 figures 19-E, 20-E, 21-E, 22-E, 23-E and 24-E), defined by the
3 biggest base(1), the minor(1') and the sides(1").

4 With this form, according to the position in that the sides are
5 coupled (1") of the connected bottles, it is able to obtain
6 undulant conformations as that of the figure 21-E, segmented as
7 in the figure 23-E, in arch like in 22-E half clock like form,
8 completed it can define a complete circle; straight line as in
9 the figure 24-E; etc.

10 In all the cases, the bottles this way connected, anyone is
11 their form and the type of the used joining means, it allows to
12 build walls or hollow, insulating structures, or you stuff with
13 such diverse materials as earth, sand, etc.

14 It is certain that to the being the present invention taken to
15 the practice, they will be able to be introduced modifications
16 that that to certain construction details and is formed refers,
17 without it implies it to move away from the fundamental
18 principles that you substancian clearly in the clauses
19 reivindicatorias that continue next.

20
21 They follow the claims: